

IMPROVED DIGITAL CAMERA DEVICE WITH METHODOLOGY FOR EFFICIENT
COLOR CONVERSION

ABSTRACT OF THE DISCLOSURE

5 A digital imaging system is described that provides techniques for reducing the amount of processing power required by a given digital camera device and for reducing the bandwidth required for transmitting image information to a target platform. The system defers and/or distributes the processing between the digital imager (i.e., digital camera itself) and the target platform that the digital imager will ultimately be connected to. The system only performs a partial computation at the digital imager device and completes the computation somewhere else, such as at a target computing device (e.g., desktop computer) where time and size are not an issue (relative to the imager). This image processing technique employs an efficient color conversion process, using a GUV color space. After an RGB mosaic (image) is captured, the image may be "companded" or quantized by representing it with less bits (e.g., companding from 10 bits to 8 bits). The image is then mapped from RGB color space to GUV color space, using an RGB-to-GUV transformation. Once converted into GUV color space, the image may now be compressed, for instance using wavelet transform-based compression, and then transmitted, using wireless or wire-line transfer, to a target platform (e.g., desktop or server computer). At the target platform, the GUV information may be restored in a non-compressed format and then further processed into a desired representation (e.g., standard format, such as JPEG). In this fashion, the GUV-based methodology avoids the inefficiency of remaining in RGB color space and avoids the computational complexity of converting to YUV color space, yet retains the benefits associated with YUV color space (e.g., de-correlation of image information).